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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/648,891	08/27/2003	Vlad Popescu Stanesti	02MICRO 03.05 CIP	5099
32047	7590	02/28/2005	EXAMINER	
GROSSMAN, TUCKER, PERREAULT & PFLEGER, PLLC 55 SOUTH COMMERICAL STREET MANCHESTER, NH 03101			GRANT, ROBERT J	
			ART UNIT	PAPER NUMBER
			2838	

DATE MAILED: 02/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/648,891

Applicant(s)

STANESTI ET AL.

Examiner

Robert Grant

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 August 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kitagawa (US 6,204,633) in view of Tamai (US 5,442,274).

As to claim 1, Kitagawa a charging circuit for controlling a system charging parameter provided to a host of batteries (Figure 3), wherein said host of batteries comprises at least a first battery and second battery that may be coupled in parallel (Element 14x and 14y), said charging circuit comprising: a first path configured to monitor a first battery charging current level provided to said first battery (Element 15x); a second path configured to monitor a second battery charging current level provided to said second battery (Element 15y). Kitagawa does not expressly disclose a regulating circuit configured to reduce said system charging parameter provided to said host of batteries if said first charging current exceeds a first predetermined maximum charging current level or said second charging current exceeds a second predetermined

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maximum charging current level. Tamai teaches a regulating circuit configured to reduce said system charging parameter provided to said host of batteries if said first charging current exceeds a first predetermined maximum charging current level (column 8 lines 12-18). It would have been obvious to a person having ordinary skill in the art at the time of this invention to reduce the charging parameters when the current reaches a predetermined maximum, such as Tamai teaches, with the multiple battery charger design of Kitagawa in order to create a battery charger that is capable of charging multiple battery simultaneously with protection from overcharging.

As to Claim 2, which is dependent upon claim 1, Kitagawa in view of Tamai disclose wherein said first predetermined maximum charging current level is substantially equal to said second predetermined maximum charging current level (Kitagawa design require that the batteries have substantially equal charging limits in order for the control means to function properly).

As to Claim 3, which is dependent upon claim 1, Kitagawa disclose a charger further comprising: a third path configured to monitor a first battery charging voltage level provided to said first battery (Figure 3, Elements 11 and 12x); and a fourth path configured to monitor a second battery charging voltage level provided to said second battery(Figure 3, Elements 11 and 12y), Kitagawa does not expressly disclose wherein said regulating circuit is configured to reduce said system charging parameter provided to said host of batteries if said first charging voltage level exceeds a first predetermined

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maximum charging voltage level or said second charging current voltage level exceeds a second predetermined maximum charging voltage level. Tamai teaches wherein said regulating circuit is configured to reduce said system charging parameter provided to said host of batteries if said first charging voltage level exceeds a first predetermined maximum charging voltage level (Column 7, lines 64-68 and Column 8 Lines 1-8). It would have been obvious to a person having ordinary skill in the art at the time of this invention to reduce the charging parameters when the voltage reaches a predetermined maximum, such as Tamai teaches, with the multiple battery charger design of Kitagawa in order to create a battery charger that is capable of charging multiple battery simultaneously with protection from overcharging.

As to claim 4 which is dependent upon claim 3, Kitagawa in view of Tamai disclose wherein said first predetermined maximum charging voltage level is substantially equal to said second predetermined maximum charging voltage level (Kitagawa design require that the batteries have substantially equal charging limits in order for the control means to function properly).

As to Claim 5, which is dependent upon claim 1, Tamai discloses wherein said first path comprises a first error amplifier configured to receive a first monitoring signal representative of said first battery charging current level (Column 8, lines 9-11, +terminal) and a first comparison signal representative of said first predetermined maximum charging current level (Column 8, lines 11-12, -terminal), and to provide a

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first control signal to said regulating circuit based on a difference between said first monitoring signal and said first comparison signal (column 8, lines 12-15). As in all the previous examples, Tamai disclose only one set due to his providing charging to only one battery. It would have been obvious at the time of this invention to include second path comprises a second error amplifier configured to receive a second monitoring signal representative of said second battery charging current level and a second comparison signal representative of said second predetermined maximum charging current level, and to provide a second control signal to said regulating circuit based on a difference between said second monitoring signal and said second comparison signal, in order to control the charging of a second battery such as in Kitagawa multiple battery charger.

As to Claim 6 Kitagawa discloses A method for controlling a system charging parameter provided to a host of batteries (Figure 3), wherein said host of batteries comprises at least a first battery and second battery that may be coupled in parallel (Elements 14x and 14y), said method comprising: monitoring a first battery charging current level provided to said first battery (Element 15x); monitoring a second battery charging current level provided to said second battery (Element 15y); Kitagawa does not expressly disclose reducing said system charging parameter provided to said host of batteries if said first charging current level exceeds a first predetermined maximum charging current level or said second charging current level exceeds a second predetermined maximum charging current level. Tamai teaches reducing said system

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charging parameter provided to said host of batteries if said first charging current level exceeds a first predetermined maximum charging current level (Column 8, lines 12-18). It would have been obvious to a person having ordinary skill in the art at the time of this invention to reduce the charging parameters when the current reaches a predetermined maximum, such as Tamai teaches, with the multiple battery charger design of Kitagawa in order to create a battery charger that is capable of charging multiple battery simultaneously with protection from overcharging.

As to Claim 7, which is dependent upon claim 6, Kitagawa in view of Tamai discloses wherein said first predetermined maximum charging current level is substantially equal to said second predetermined maximum charging current level (Kitagawa design require that the batteries have substantially equal charging limits in order for the control means to function properly).

As to claim 8, which is dependent upon claim 6, Kitagawa discloses monitoring a first battery charging voltage level provided to said first battery (Figure 3, Elements 11 and 12x); monitoring a second battery charging voltage level provided to said second battery (Figure 3, Elements 11 and 12y). Kitagawa does not expressly disclose reducing said system charging parameter provided to said host of batteries if said first charging voltage level exceeds a first predetermined maximum charging voltage level or said second charging voltage level exceeds a second predetermined maximum charging voltage level. Tamai discloses reducing said system charging parameter

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provided to said host of batteries if said first charging voltage level exceeds a first predetermined maximum charging voltage level (column 7, lines 64-68 and Column 8 lines 1-8). It would have been obvious to a person having ordinary skill in the art at the time of this invention to reduce the charging parameters when the voltage reaches a predetermined maximum, such as Tamai teaches, with the multiple battery charger design of Kitagawa in order to create a battery charger that is capable of charging multiple battery simultaneously with protection from overcharging.

As to claim 9 which is dependent upon claim 8, Kitagawa in view of Tamai disclose wherein said first predetermined maximum charging voltage level is substantially equal to said second predetermined maximum charging voltage level (Kitagawa design require that the batteries have substantially equal charging limits in order for the control means to function properly).

As to claim 10, Kitagawa discloses A charging circuit for regulating an output parameter of a DC to DC converter (Figure 3, Element 11), said output parameter of said DC to DC converter providing power to a host of batteries, wherein said host of batteries comprises at least a first battery and second battery that may be coupled in parallel (Element 14x and 14y), said charging circuit comprising: a first path configured to monitor a first battery charging current level provided to said first battery (Element 15x); a second path configured to monitor a second battery charging current level provided to said second battery (Element 15y); a third path configured to monitor a

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first battery charging voltage level provided to said first battery (Elements 11 and 12x); a fourth path configured to monitor a second battery charging voltage level provided to said second battery (Element 11 and 12y). Kitagawa does not expressly disclose a regulating circuit configured to reduce said output parameter of said DC to DC converter if one of said first battery charging current level, said second battery charging current level, said first battery charging voltage level, and said second battery charging voltage level exceeds an associated predetermined maximum level when said first battery and said second battery are coupled in parallel. Tamai discloses reduce said output parameter if one of said first battery charging current level (Column 8 lines 12-18) or first battery charging voltage level exceeds an associated predetermined level (Column 7 lines 64-68 and Column 8 lines 1-8). It would have been obvious to a person having ordinary skill in the art at the time of this invention to reduce the charging parameters when the current or voltage reaches a predetermined maximum, such as Tamai teaches, with the multiple battery charger design of Kitagawa in order to create a battery charger that is capable of charging multiple battery simultaneously with protection from overcharging.

As to Claim 11, Kitagawa discloses an electronic device comprising: a host of batteries comprising at least a first battery and a second battery coupled in parallel (figure 3, element 14x and 14y); a charging circuit for controlling a system charging parameter provided to said host of batteries, said charging circuit comprising (figure 3): a first path configured to monitor a first battery charging current level provided to said first battery

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(element 15x); a second path configured to monitor a second battery charging current level provided to said second battery (element 15y). Kitagawa does not expressly disclose a power management unit configured to provide an output signal representative of at least a first predetermined maximum charging current level and a second predetermined maximum charging current level; and a regulating circuit configured to reduce said system charging parameter provided to said host of batteries if said first charging current exceeds said first predetermined maximum charging current level or said second charging current exceeds said second predetermined maximum charging current level, compare said first battery charging current level to said first predetermined maximum charging current level, and compare said second battery charging current level to said second predetermined maximum charging current level. Tamai discloses a power management unit configured to provide an output signal representative of at least a first predetermined maximum charging current level (Column 8, lines 12-18, and the control circuitry), and a regulating circuit configured to reduce said system charging parameter provided to said host of batteries if said first charging current exceeds said first predetermined maximum charging current level (Column 8, lines 12-18), compare said first battery charging current level to said first predetermined maximum charging current level (column 8, lines 9-12). It would have been obvious to a person having ordinary skill in the art at the time of this invention to reduce the charging parameters when the voltage reaches a predetermined maximum, such as Tamai teaches, with the multiple battery charger design of Kitagawa in order to

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create a battery charger that is capable of charging multiple battery simultaneously with protection from overcharging.

As to claim 12, which is dependent upon claim 11, Kitagawa in view of Tamai do not expressly discloses wherein said output signal from said power management unit comprises an analog signal. It would have been obvious at the time of this invention to a person having ordinary skill in the art, that the photo coupler could be omitted and a hard wiring could be used to communicate the signal to the PWM control circuit, in which case the out put signal would be an analog signal. This would have been beneficial for reliability purposes, as there is less complication involved when dealing with a hard wiring as opposed to a photo coupler.

As to claim 13, Kitagawa in view of Tamai disclose wherein said output signal from said power management unit comprises a digital signal (Tamai Figure 9, element 90)(The photocoupler sends out a digital signal).

As to Claim 14, which is dependent upon claim 13, Tamai discloses wherein said charging circuit further comprises: a digital interface configured to receive said digital signal (figure 9, element 90) from said power management unit (figure 9, element 82) and provide an interface output signal; and a DAC configured to receive said interface output signal and convert said signal to an analog signal representative of said interface output signal (Figure 9, Element 89) (The photocoupler sends out a digital

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signal with required voltages or currents, the PWM control circuit receives these signals and creates the requirements. To prove this, Elements 94 and 95 are analog to digital converters for supplying the computation circuit with digital representations of value for current and voltage that were sent out in analog form by the PWM control circuitry).

3. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kitagawa in view of Tamai in further view of Hatular (US 6,184,660).

As to claim 15, Kitagawa in view of Tamai disclose all the limitations of claim 14, which claim 15 is dependent upon. Kitagawa in view of Tamai do not expressly disclose wherein said charging circuit further comprises a multiplexer to separate said analog signal into a plurality of analog signals representative of at least said first predetermined maximum charging current level and said second predetermined maximum charging current level. Hatular discloses wherein said charging circuit further comprises a multiplexer (Figure 1B., Element 50) to separate said analog signal into a plurality of analog signals representative of at least said first predetermined maximum charging current level and said second predetermined maximum charging current level (Column 10, lines 13-15). It would have been obvious to a person having ordinary skill in the art at the time of this invention to combine the teachings of Hatular with the battery charger of Kitagawa in view of Tamai, in order to be capable of separating an analog signal into a plurality of analog signals, for the benefit of needing less input signals and therefore a more condensed circuit.

4. Claims 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kitagawa in view of Tamai in further view of Yilmaz et al. (5,715,156).

As to claim 16, Kitagawa discloses An electronic device that may be powered by one or more of a host of rechargeable batteries or a DC power source (Figure 3), a charging circuit configured to control charging of said host of rechargeable batteries (figure 3), wherein said host of batteries comprises at least a first battery (Element 14x) and a second battery (Element 14y) coupled in parallel, said charging circuit comprising: a first path configured to monitor a first battery charging current level provided to said first battery (Element 15x); a second path configured to monitor a second battery charging current level provided to said second battery (Element 15y), a selector configured to select at least one of said host of batteries (Element 12x and 12y). Kitagawa does not expressly disclose a regulating circuit configured to reduce said system charging parameter provided to said host of batteries if said first charging current exceeds said first predetermined maximum charging current level or said second charging current exceeds said second predetermined maximum charging current level; and a selector circuit configured to select at least one of said DC source in response to a PMU output signal from said PMU. Tamai discloses said electronic device comprising: a power management unit (PMU) configured to run a power management routine (Figure 9, element 82); and compare said first battery charging current level to said first predetermined maximum charging current level (column 8,

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lines 12-18). Yilmaz discloses a Power selecting device, in which one source comes from AC that was converted into DC (DC source), and another that comes from a DC source such as a car battery or battery pack (Figure 2). It would have been obvious to a person having ordinary skill in the art at the time of this invention to combine the teachings of Tamai and Yilmaz with the multiple battery charger of Kitagawa. By doing so would yield a battery charging capable of charging multiple batteries while monitoring and controlling the current provided to the batteries, and incase there is not sufficient power provided to the batteries a source selector is provided to allow charging from an alternate source.

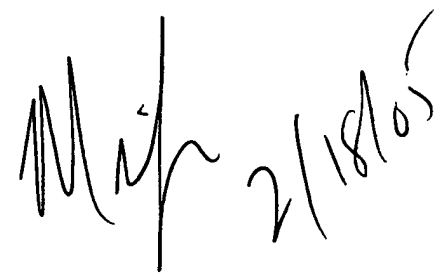
As to claim 17, which is dependent upon claim 16, wherein said charging circuit and said selector circuit are integrated onto one integrated circuit. The court has stated in *In re Larson*, 340 F.2d 965, 968, 144 USPQ 347, 349 (CCPA 1965) "that the use of a one piece construction instead of the structure disclosed in [the priorart] would be merely a matter of obvious engineering choice.") MPEP 2144.04. Therefore, Kitagawa discloses a charging circuit (Figure 3) and a selector circuit (Figure 3, elements 12x and 12y).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert Grant whose telephone number is 571-272-2727. The examiner can normally be reached on M-F 8:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Sherry can be reached on 571-272-2084. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

RG

Handwritten signature of Michael Sherry and the date 2/18/05.

MICHAEL SHERRY
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800